Checkout Procedure For The 10U, 21 Slot VME Crate For The MINOS Far Detector and Near Detector Electronics

Description:

The crate is a 10U with four 6U X 160mm card slots and sixteen 9U X 400mm card slots. There are 100mm deep transition card slots in the rear. The J1/J2 backplane is a monolithic 21 slot VME64X standard backplane. The J3 backplanes in the Near Detector crates are different than those in the Far Detector crates. The J3 for the Near Detector crates is an unbussed 21 slot backplane. The J3 for the Far Detector crates is a 12 slot standard J1 type (bussed) backplane starting in slot 6 for the Far Detector crates. The cross rails in the front are of the VME64 style which accommodate injector/ejector handles on module faceplates.

Checkout Procedure Of 10U MINOS Crates

Date:_____ Tech Initials:_____ Prop Number: _____

Physical Examination:

1. Using a known good crate compare the following major mechanical aspects of the crate and report any deviations.

    a) Compare the number and style of screws visible on the side plates
    b) Compare the cross rails and backplane support members of the front electronics module area, the rear module area.
    c) Compare the backplanes to ensure they are the proper models. Compare both the front and the rear of each backplane. Compare the number and placement of the screws used to mount the backplanes. Certain mounting holes will ground the backplane to the chassis.
    d) Compare the power terminals and guarantee that they are of the proper type.

2. Ensure that the card guides are all present, and that they are straight and mounted securely.
3. Examine the injector/ejector rails to ensure that they are not bent or otherwise damaged. If some have ends that are bent slightly, please straighten these with a pair of pliers.
4. Examine the shrouds on the rear of the J1 and J2 backplanes to ensure that they have the proper orientation and all of the nuts and bolts are present and properly secured.
5. Examine the pins in the J1 and J2 connectors on the rear of the backplanes to ensure that they are not bent or broken off.
6. Examine the connector on all backplanes to ensure proper orientation and servicable condition. Ensure there is no debris trapped in the connections. Use a bright light as needed.
7. Ensure that the J0 connectors have been installed in the first 4 slots and that the pins appear to be in good condition.
8. Use the circuit board provided or a similar device to check the alignment of the backplanes.
9. Open the cover of the power entry section. Ensure that the connections between the power feedthroughs and the power bus planes and the backplane are tight. Ensure that the attachment of the power lugs to the power cabling is secure and that the clearance between power lugs, power feedthroughs and the chassis is atleast 0.100" (more where achievable) .

Electrical Examination

1. The backplanes do undergo tests for shorts and opens in each of the signals paths at the factory.
2. Perform a continuity test with and ohm meter between each of the power input connections and ground, and between each other. There will be no continuity between ground and the crate. The following measurements can be made at the rear power connections.

+ Ohm Lead	- Ohm Lead	Pass Condition	Result (Pass/Fail)
Common	Other Common	< 0.5 Ohms	
+5 Vdc	Common	> 200 Ohms	
+12 Vdc	Common	> 2 M Ohms	
-12 Vdc	Common	> 2 M Ohms	
+3.3 Vdc	Common	> 2 M Ohms	
+5 Vdc	+3.3 Vdc	> 2 M Ohms	
+12 Vdc	+5 Vdc	> 2 M Ohms	
+5 Vdc	-12 Vdc	> 2 M Ohms	
+12 Vdc	-12 Vdc	> 2 M Ohms	
+12 Vdc	+ 3.3 Vdc	> 2 M Ohms	
+3.3 Vdc	-12 Vdc	> 2 M Ohms	
J1 pin D12	+3.3 Vdc	< 0.5 Ohms	
J1 pin C32	+5 Vdc	< 0.5 Ohms	
J1 pin C31	+12 Vdc	< 0.5 Ohms	
J1 pin A31	-12 Vdc	< 0.5 Ohms	
Card guide rails	Crate side panel	> 2 M Ohms	